The Challenge of Treating Loss of Control Eating: Its More than Just BED

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BETR – Chicago

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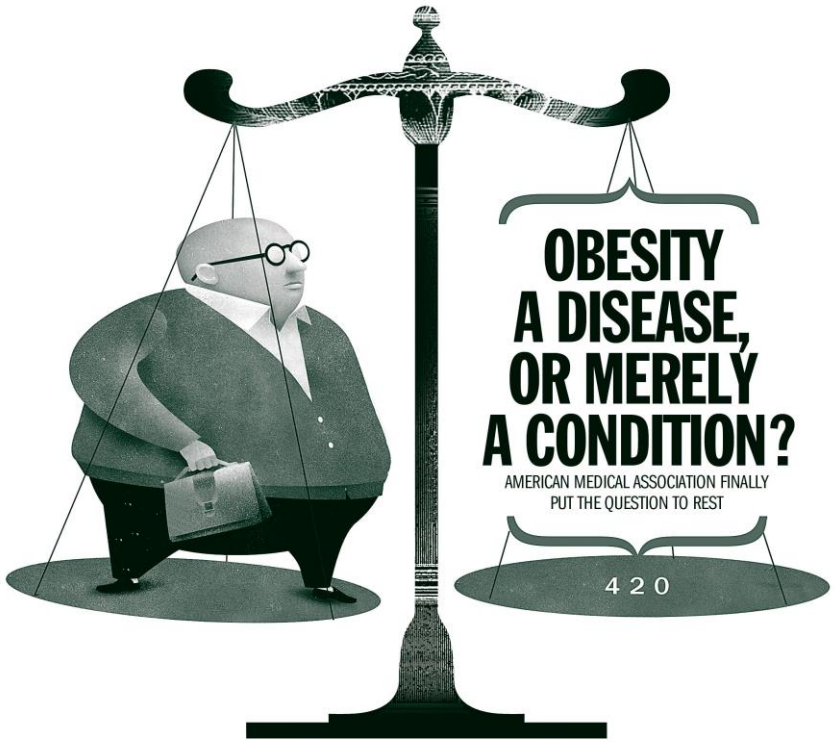
Is Obesity a Disease?

- 1984: IRS-202-19 Obesity treatment deductible as a Medical Expenses
- 1998: National Institute of Health
- 1999: Social Security
- April 2002: IRS; deduct cost of weight loss programs
- July 2004: Medicare [Jan. 2015]
- May 2013: DSM-5: BED
- June 2013: AMA
- 2016: ICD-10 BED



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Is Obesity a Disease?
(Bray '17)

- An arbitrary number identifying a set of symptoms
  - Decreases life expectancy
  - Impairs normal body functioning
  - Attributed to genetic factors
- Justifies reimbursement for counseling, surgery, or medication
- Removes stigma
  - Neglectful parents endangering their child
  - A character defect & lack of will power

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Obesity: The Ultimate Scapegoat

(Pub Med; Medscape; Medline; Cochrane Review; Google Scholar; Professional List Serves)

- **Relationship between obesity and its deleterious effects* to every organ**

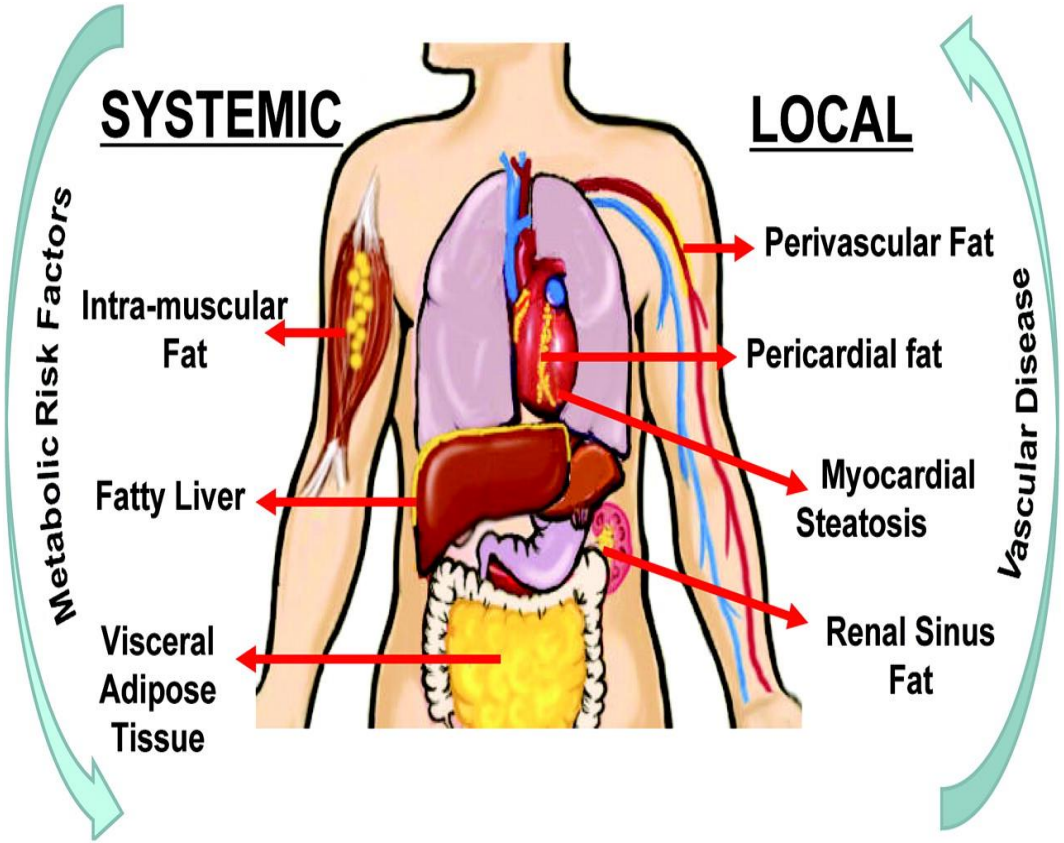
- *60

Metabolic Syndrome	Fatty Liver, NASH, Steatohepatitis, Cirrhosis	Infertility
Type 2 Diabetes	Cholecystitis, Gallstones	Shortness of breath
Hypertension	Pancreatitis	Alveolar Hypoventilation
Hypercholesterol	Reproductive Dysfunction	Stress Incontinence
Platelet Dysfunction	Sexual Hormone Intolerance	Sleep Apnea, (OSA), Exercise Induced hypoventilation, snoring
Thromboembolic Disease	POCD	Nutritional Deficiencies, Vitamin D
Stroke	Menstrual Abnormalities	Breast Cancer
Cardiomegaly	Hirsutism	Esophageal Adenocarcinoma, dysplasia
Varicose Veins	Obstetrical Complications	Endometrial Cancer
GERD	Early termination of pregnancy	Ovarian Cancer
Pseudotumor cerebri	Excess sweating	Depression
Skin infections and ulcers	Muscle spasms	Anxiety; Panic Disorder
Cellulitis	Poor temperature regulation	Binge Eating disorder
Peripheral edema	Wrinkly easily	Reactive bulimia
Stretch marks	Dental Decay	Gum Disease risk
Surgical complications	Dandruff	Gliomas
Anesthesiological risk	Flat feet	Hyperlordosis
Joint pain; musculoskeletal complications	Immunological derangement; colds and flus	Gout
Osteoarthritis; axial, vertebral	Hemorrhoids	Prostate Cancer
Bruise easily	Cellulite	Uterine Cancer

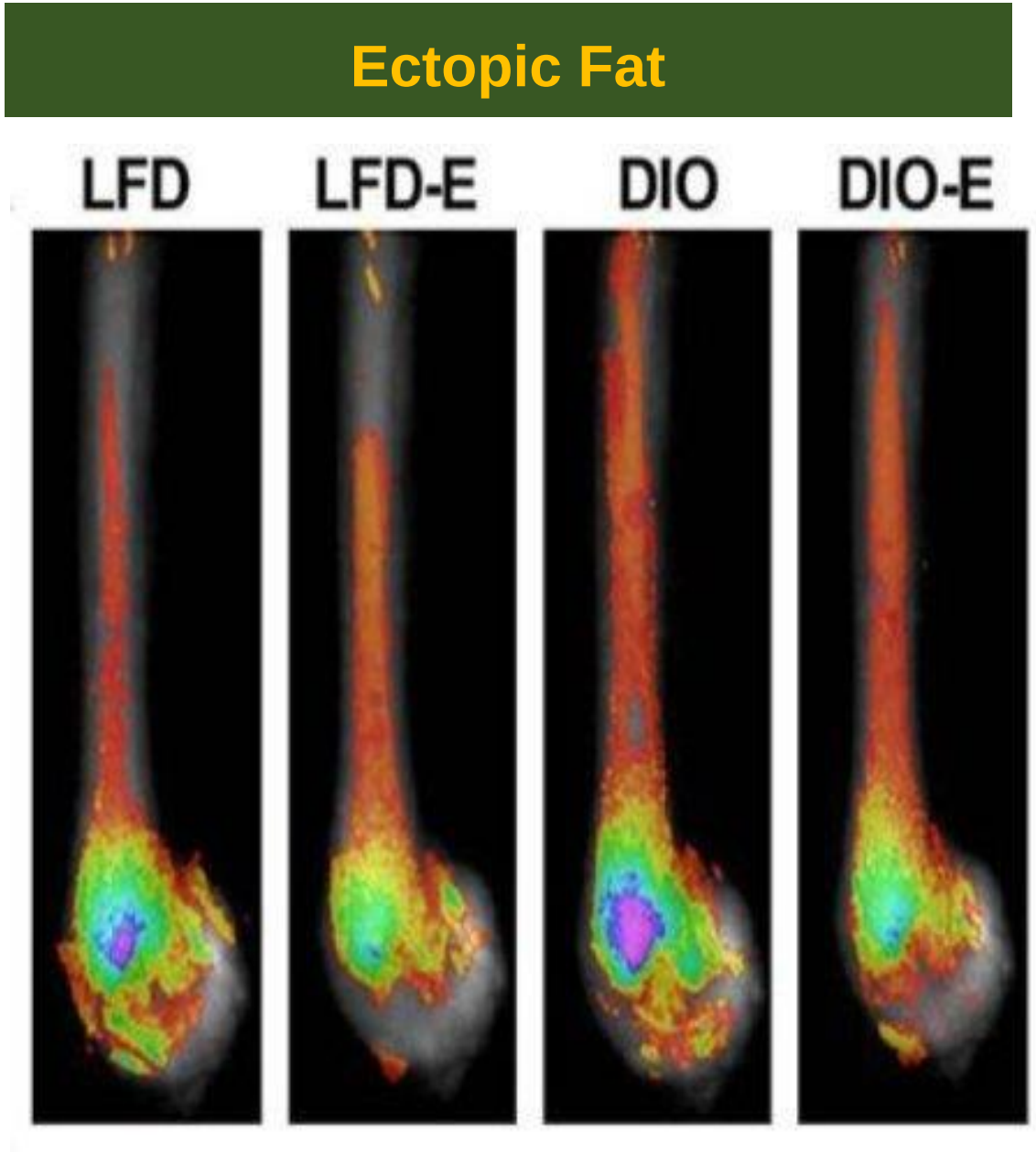
Visceral Abdominal Tissue

(Samocha-Bonet ’14; Pajunen ‘11; Pujia ’16; Goncalves ’16; Hwang ’15; Camhi ’14; Brochu ’01; Karelis ’05; Ortega ’15; Senechal ‘13)

- Inflammation
- Cardiovascular disease
- Hypertension
- Dyslipidemia
- Diabetes
- Insulin resistance
- Metabolic syndrome

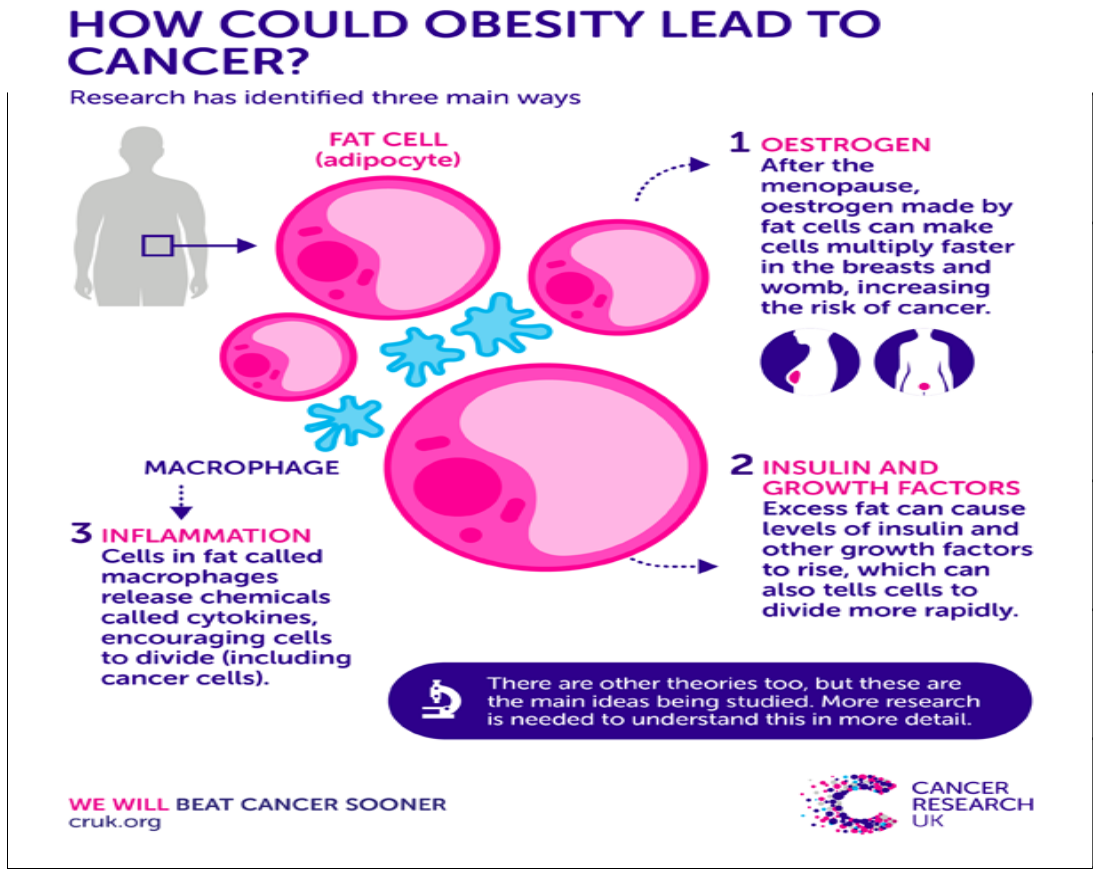


- **Fatty Liver** (Weib ‘14; Zhang ‘16)
  - **Asymptomatic**
  - **Dyslipidemia, IR, CVD**
  - **Liver cancer ↑3x since 1980**
- **Pericardial fat** (Khoudary ’17; Iacobellis ‘08)
- **Perivascular adipose tissue (PVAT) dysfunction**
- **Perirenal fat** (Chandra ‘14)
- **Peri-pancreatic fat** (Zyromski ’15; Gaborit 15)
- **Intramuscular fat** (Yang ‘14)
- **Bone Marrow fat** (Styner ‘17)



Subcutaneous fat influences sex hormones

(Thun ‘04; Heimlich ’09; Donahue ’11; Calle ‘03; Hoel ‘15; Ritte ‘12; Allen ’10; Garland ‘98; Byers ’15; van Gemert ‘17)



NEONATAL COMPLICATIONS

Infertility	Low Birth Weight
Miscarriges	Caesarian Delivery
Still born	Child’s Health Problems
Premature or early termination Births	Child Obesity

Health consequences of excess load on the body

- Sleep apnea
- Stress Incontinence
- Exercise Induced Hypoventilation
- GERD
- Venous Stasis
- Severe Arthritis (& Gout)
- Limited mobility & injuries
- Surgical complications
- Cardiac remodeling
- Gall stones (Stender ‘13)

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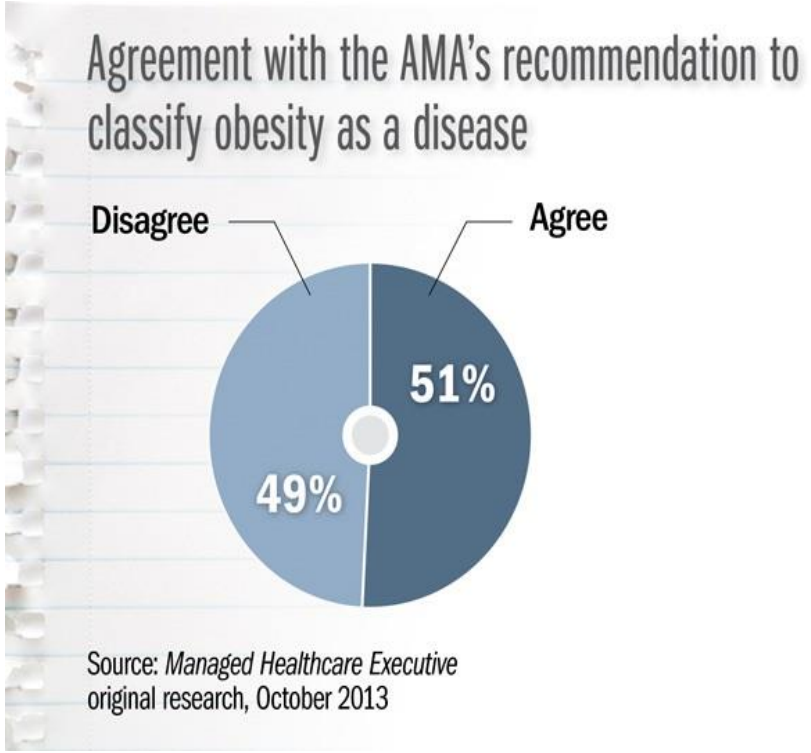
Obesity is not a Disease?
(Sammer '14)

- Classifies 78 million adults and 12 million children as sick
- 35% of obese are actually healthy & excluded from being normal
- Decision needs to be based on a comprehensive assessment
- Implies powerless over recovery
- Obesity is a risk factor and not the cause of death



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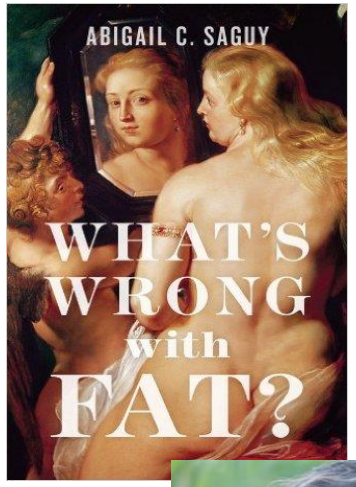
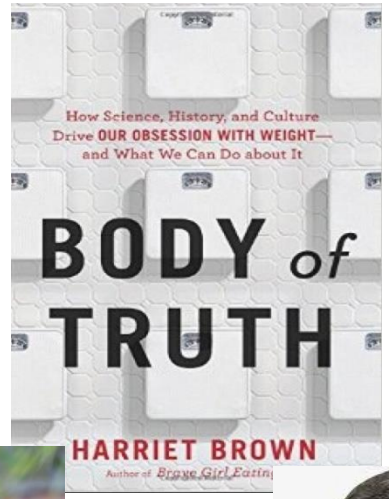
Ow/ob was linked to lower risk of premature death

(Flegal ’08; ‘13; Lavie ’14; Brown ’15; Shoaib ’16; Afsal ‘16)

- **Slightly obese conferred no excess risk of death** (Flegal ‘13)
- **New IBW: BMI 25 – 35**(Flegal ‘13)
- **Metabolically sound vs. body weight** (Saguy ‘13)
- **MHO: Less abdominal & ectopic fat; more brown fat and weight in lower extremities**
- **Dieting MHO have lower life expectancy** (Brown ’15; Shuma ‘09)





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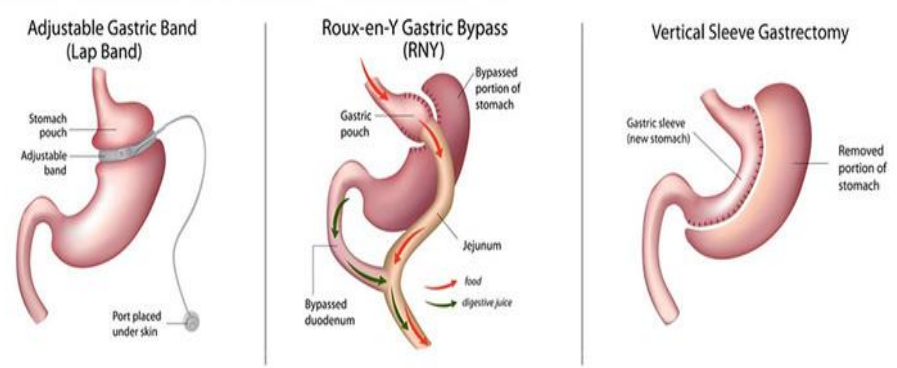
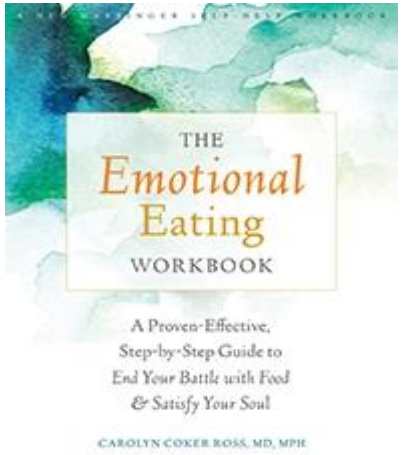
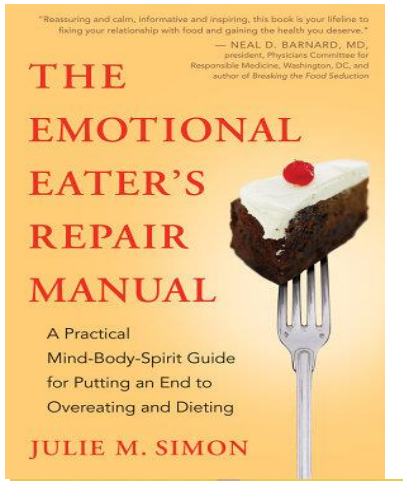
Loss of Control Eating Disorders

(Ross '09; '16; Roth '93; Mintle '02)

- Binge Eating Disorder (BED)
- Bulimia Nervosa (BN)
- OSFED
  - BED of low frequency and/or limited duration
  - Grazing
  - Night Eating Disorder
- Pre- and Post- Bariatric Surgery Care
- Compulsive overeating/ "food addiction"
- Emotional Eating







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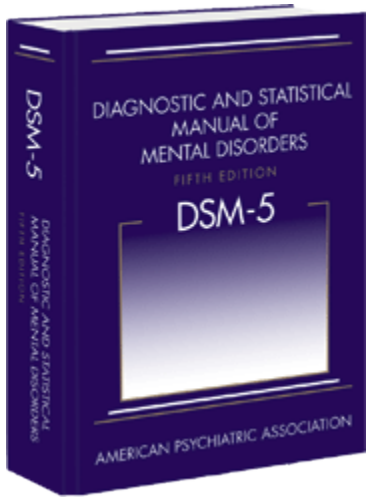
BED is REAL
(APA DSM-V May 2013)

- Categorized as an eating disorder driven by
  - Loss of control
  - Experiencing significant distress
  - Frequency & Duration
- Grazing rather than objectively consuming a large volume of food
- Bulimia nervosa
  - Associated with compensatory behavior



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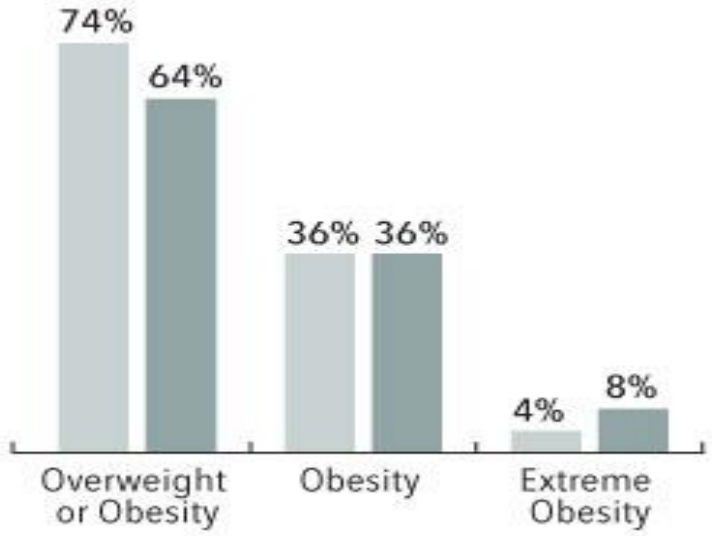
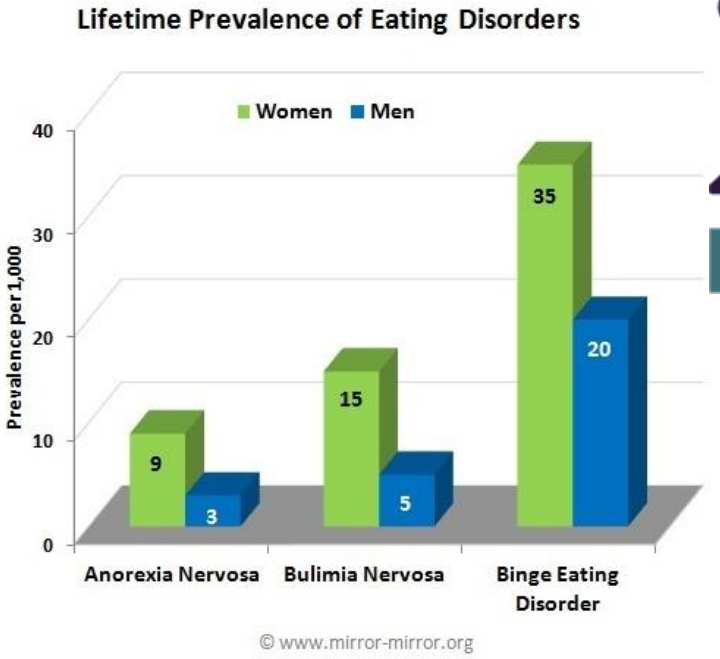
Prevalence of Binge Eating Disorder

- **5.5% of adults have BED** (Hudson ’07; Kessler ’13; Darby ’09; APA ‘13; Marcus ‘05)
  - **Greater than AN & BN combined**
- **Up to 30% of severely obese seeking obesity treatment** (Allison ‘06)
- **Only 3.2% report every receiving a diagnosis of BED from a health care survivor** (Crossrow ‘16)





2.8 MILLION

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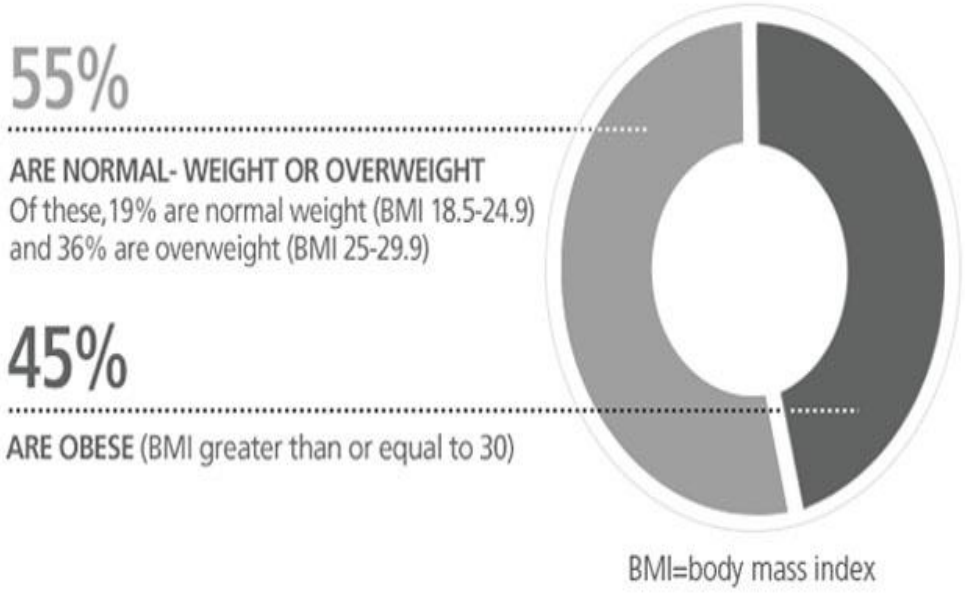
A Fact About the Typical Binge Eater May Surprise you

(Sheehan ‘15; Montanao ’16; Mussell ’96; Burgess ’16; *Hudson ’07; Kessler ‘13)



***19% BMI19-25**	***29.2% BMI 30 - 40**
***35.7% BMI 25-30**	***16.2% BMI >40**

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BED and BN: Psychological Co-morbidities

(Halmi ’10; Johnson ‘01; Kaye ‘04; McElroy ’05; Hudson ‘07)

- **At least one lifetime comorbid psychiatric DSM-IV disorder was present in 80% of patients with binge eating disorder**

Major depressive disorder	Borderline Personality Disorder
Anxiety Disorder	Bipolar Disorder
PTSD	Somatic Disorders; Fibromyalgia; IBS
ADHD	Substance Abuse & Dependence
OCD	Body Dysmorphic Disorder
Asperger’s	Sleep Disorders

Behavioral Consequences Associated with BED

- **Relationship dissatisfaction** (Ackard ’11; Whisman ‘12)
- **Impaired social role** (Javaras ‘08; Kessler ’14; Whisman ’12: Hudson ‘07)
  - **Miss work, social activities & family responsibilities**
  - **Isolate to avoid embarrassment, guilt, shame**
- **Non-obese related medical complications** (Laura ’16; Bulik ‘12; Hudson ‘07; Kessler ‘13; Richardson ‘15)
- **Psychiatric disorders** (Larsen ‘04 ; Tanofsky-Kraff ’09; White ’06)
- **Cross sensitivity** (Stice ’13; Guerdjikova ’12; Allen ’13)
- **Poor quality of life**

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Night Eating Syndrome

(Allison ’04)

- Evening hyperphagia: (>25% total calories > dinner) &/or
- Nocturnal awakening & feeding (> 2x/ week)
- 3 of 5 must also be present:
    1. Morning anorexia
    2. Urges to eat in the evening
    3. Believe eating is necessary to return to sleep
    4. Depressed mood worsening in the evening
    5. Sleep disturbances

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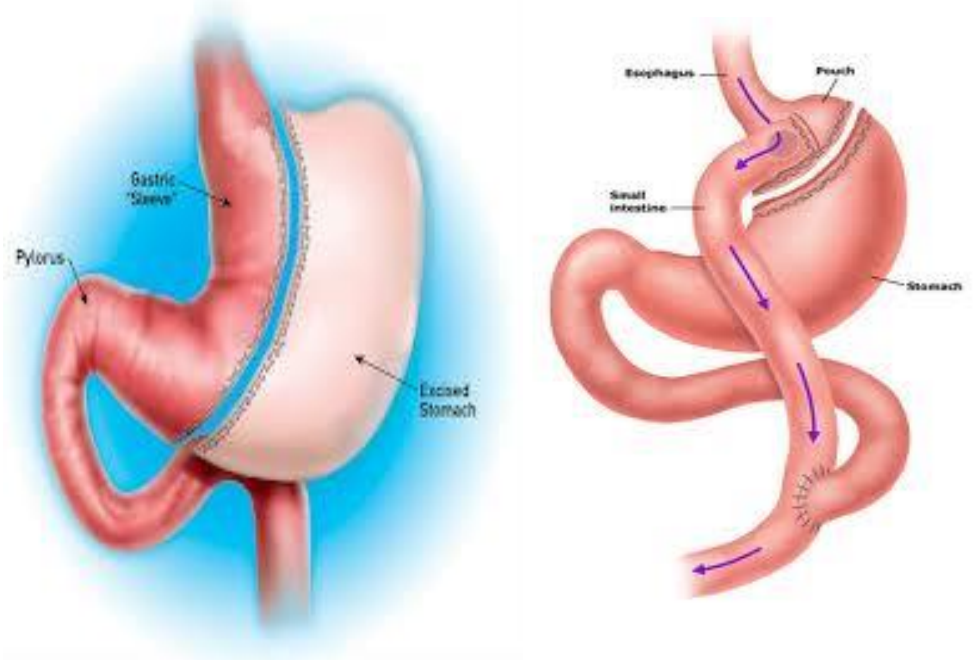
Eating Disorders in Post Bariatric Patients

(Friedman ’16; Friere ‘12; Valle ’12; Parikh ‘07)

- **17% ED in post-bariatric** (Dawes ‘16)
- **PSEAD: Post Surgical Eating Avoidance Disorder** (Siegel ‘04)
- **Grazing, Picking & Nibbling: 20% - 60%** (Guarda ‘15; Conceidao ‘13.’15; Colles ‘08; De Zwaan ‘01; Burgmer ‘05; Saunders ‘08)
- **Plugging or Purging** (Guarda ‘15; Conceidao ‘13, ’15; Sarwer ‘05; Kriwanek ‘00; Pessina ’01; de Zwann ‘10)
- **Spitting and Chewing** (Conceidao ‘13, Aouad ‘16)



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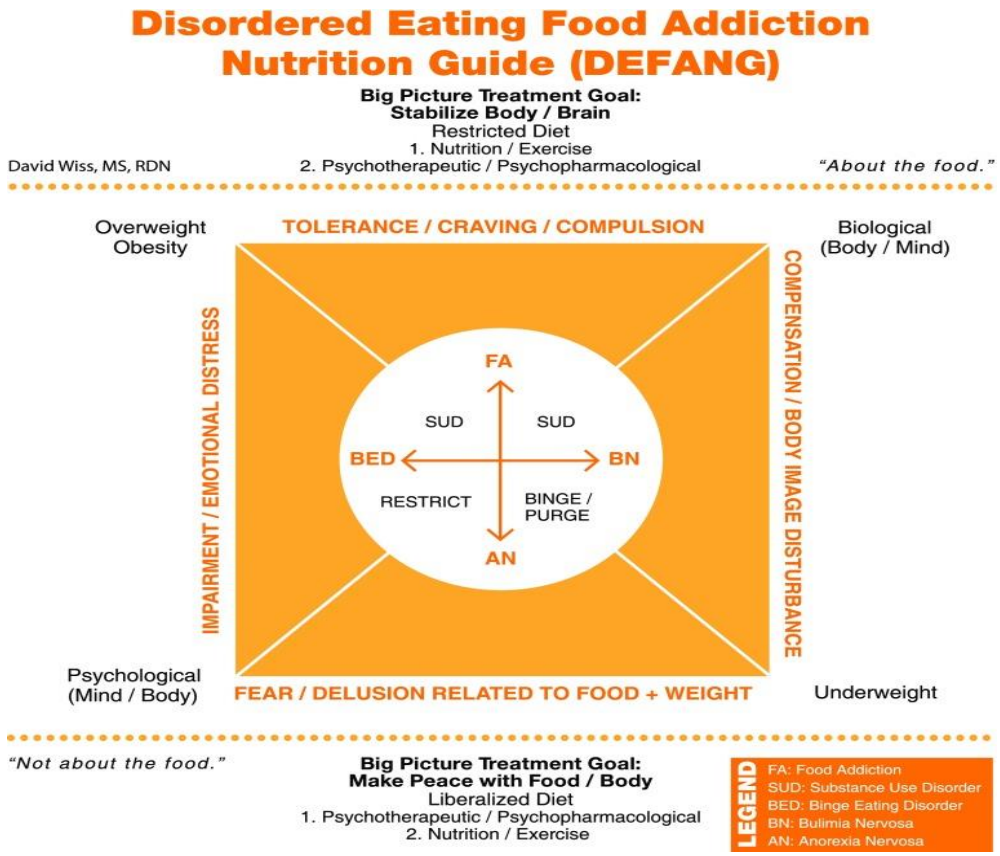
Impulse Control Disorder: Food Addiction; Compulsive Overeating

(Blumenthal ‘10, Ziaduddeen ‘13; Sogg ‘07

- **Is BED a syndrome completely beyond control?**
- **Non-substance related addictive disorders (DSM-V)**
- **Yale Food Addiction Scale** (Gearhardt ‘09; ‘11)
- **DEFANG** (Wiss ‘17)
- **Healthy relationship with food rather than abstinence**
- **Removes food as a mood regulator** (Reslan ‘13; Ivezaj ’12; Saules ‘10)
  - **Substitute**
  - **Skills training & normal eating** (Brownley ‘07)



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Chemical Addiction: Food Addiction

(Ifland '09; Corwin '09; DSM-IV-TR '00)

Tolerance	**Start out with a single cookie and gradually increasing to a whole box**
Withdrawal symptoms	******No evidence; Unpleasant physical sensations when cutting back on carbohydrates***
Attempt to cut back but experience loss of control; Powerlessness	**Unsuccessful attempts to cut use (i.e. failed attempts at dieting)**
Taking in larger amounts for a longer duration	**Intending to eat a single serving and instead eating a whole package**
Excessive time spent pursuing, using or recovering from use	**Frequent thinking, planning & preparing; or sleeping after excessive intake**
Reduction/discontinuation of important activities because of use	**Eating instead of spending time with friends; feeling too sick after overeating**
Compulsion: Continued use despite negative consequences	**Overeating in spite of being overweight; diabetes; distress of overeating**

Emotional Eating: Eating in the Absence of Hunger

(Rutters '09)

- **Stress: ↑cortisol → ↑LOC eating** (Block '09; Liu '15)
- **Restricting &/or monitoring calories ↑ stress** (Tomiyama '09; Hellmich '10)
- **Self-medicating on comfort foods to escape feeling negative emotions**(Newman '07; Wallis '04)
- **Fat, sugar and belly fat are self-soothing** (Garg '07)

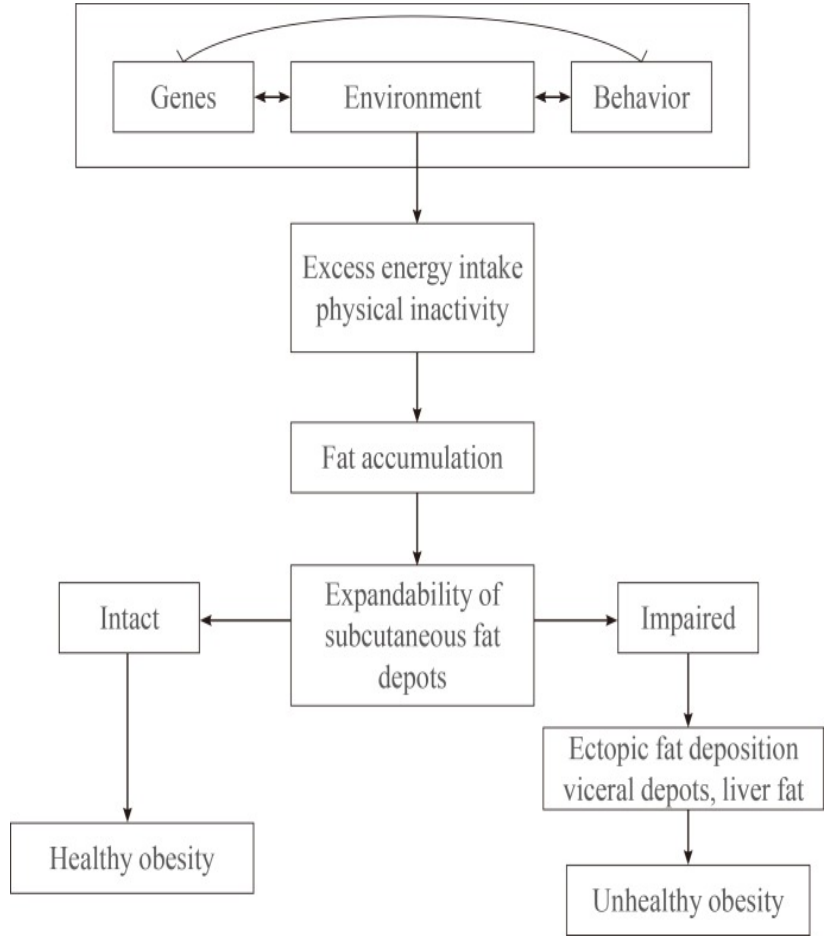
Physical Hunger	Emotional Hunger
Comes on slowly	Comes on suddenly
Deliberately make choices	Mindless Eating
Mindful of what is eaten	Want more even when stuffed
Guiltless	Experience guilt

Inherited (Predisposing)	**Triggers** (**Biopsychosocial**) (Precipitating & Perpetuating)	**Neuro Alterations**	**Repair**	**Therapy Changes the way you think**	**Nutrition**	**Sleep**
Genetics	**Environment**	**Cell Loss**	**Neuro-regeneration**	**CBT**	**COH Fiber**	**Hygiene**
Traits	**Dieting**	**Alteration of Pathways**	**Neuroplasticity**	**ERP**	**Ω-3 FA**	
	HPF; Inactivity	**Depletion Neurotransmitters**	**Resilience**	**DBT**	**Fruits and Veg**	**Safety**
	Stigma	**Downregulation receptors**	**Collateral**	**ACT**	**Protein**	**Trust**
	Stress (Cortisol)	**Epigenetics**	**Refiling**	**EDMR**	**Vitamins Minerals**	**Belief (Spirituality)**

40% of the difference in BE behavior is attributed to genetics

(Seo ’14; Javaras ’08; Mitchell ’10; Balodis ’15; Munn ‘10)

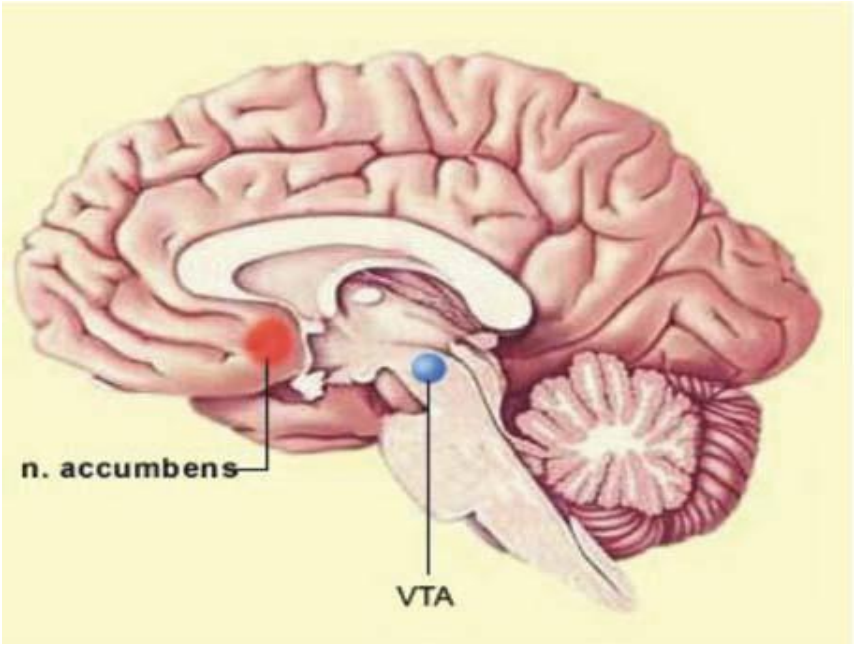
FOS	**BED; Exercise aversion; Snacking; Obesity; High FAT**	**TaqA1 DRD2**	**Addiction; High Fat**
MC4R	**BED; Hunger**	**GLUT2**	**Sugar craving**
Neuro-medin	**BED; Hunger**	**LEPR**	**Susceptible to snacking**
5HTTPRL	**Emotional Eating**	**BDNF**	**Exercise aversion**
TAS2R	**Disinhibition; vegetable aversion**	**OXTR**	**Chocolate; Waist Circumference; Socialization**



- **Enhanced responsiveness to HPFs**
- **Opioids are created endogenously during alternating patterns of excess eating and restricting of sugars and fats** (Katz ‘02; Colantuoni’02; Rada ‘05; Avena ‘05)
  - **Binge (intermittent) eating leads to alterations in opioid system** (Kelley ’02)
- **Continuous overconsumption sugary foods leads to changes in the mu-opioid receptors** (Bello ‘09a; Mysels ‘10)
- **Cues induces release of opioids (VAT)** (Nogueiras ’12; Foulds ‘09)
  - **Greater anticipation of reward increases desire to eat**

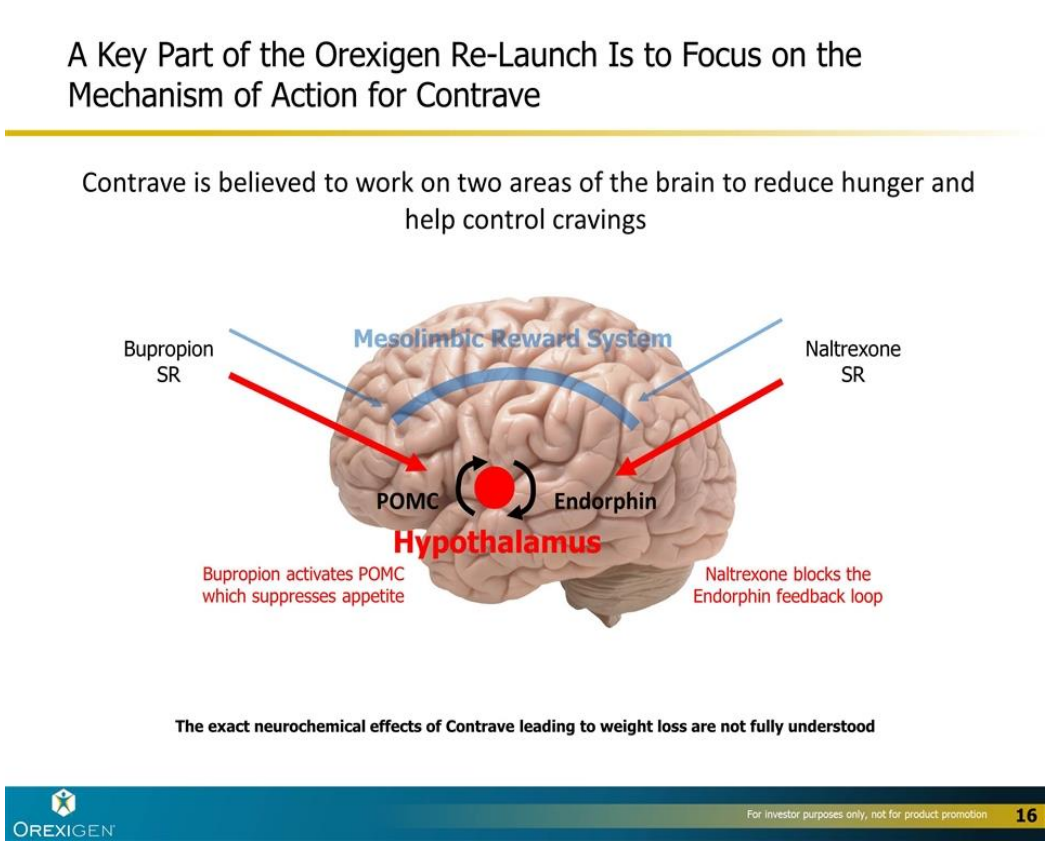
β-Endorphins (opioid): μ – receptors

(Gosnell ’09; Bernard ’03; Bello ‘09a)



Naloxone (Mu opioid antagonist): Opiate Blocker
(Meisel ’13)

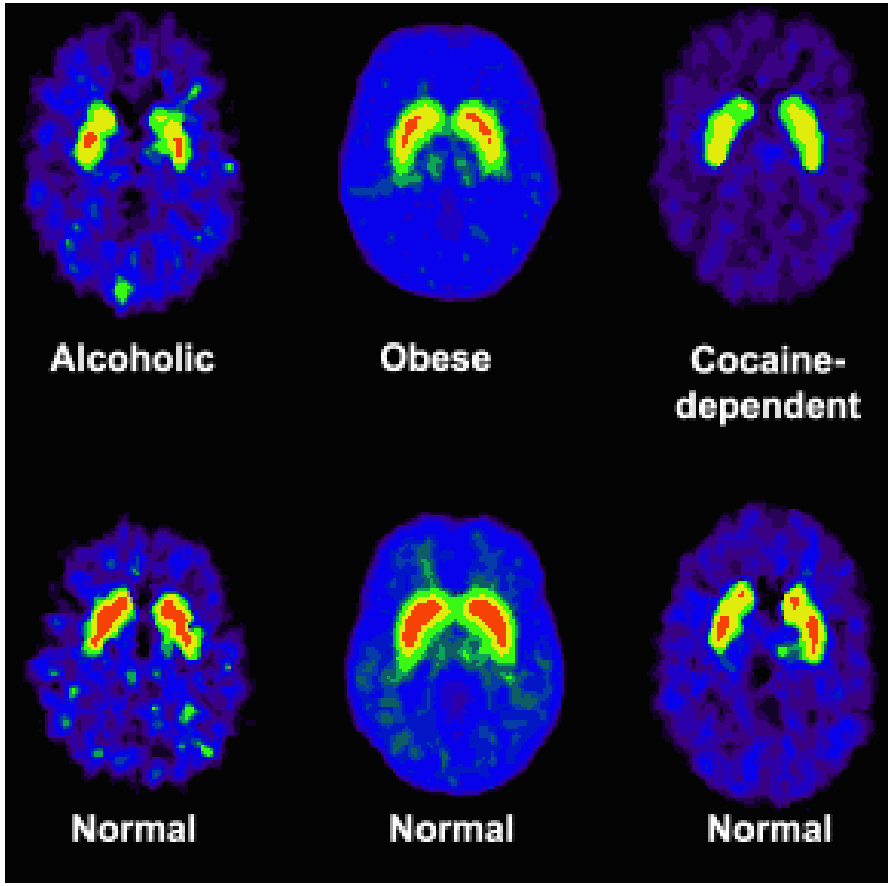
- **Administering naloxone prior to offering drug or HPF** (Drewnowski ’92; Langleben ‘12)
  - **There is little interest due to reduced taste reward**
  - **Stops a slip from becoming a relapse**
  - **Avoid giving into cues**
  - **Precipitates withdrawal symptoms** (Goodman ’08; LeMagnen ‘90)
- **Naltrexone: Ineffective for the treatment of BED** (Mitchell ’89; Alger ’91; McElroy ’13; Drewnowski ’95; Maine ’10)
  - **Contrave: Buproprion/ Naltrexone Not approved by FDA** (Light Study ’13)



Higher weight patients have adaptations that make hedonic evaluation difficult

(Berthoud ‘11; Wang ‘01; ’09; Blum ‘96;’00; Geiger ’08; Schreiber’13; Tomasi ’13; Frank ’05; Stice ‘08)

- **Reward Deficiency Syndrome** (Blum ‘96)
  - **Lower than normal D_2DR** (Wang ‘09)
  - **Less activation of the reward center**
    - **Correlates with BMI**
  - **Seek to compensate**



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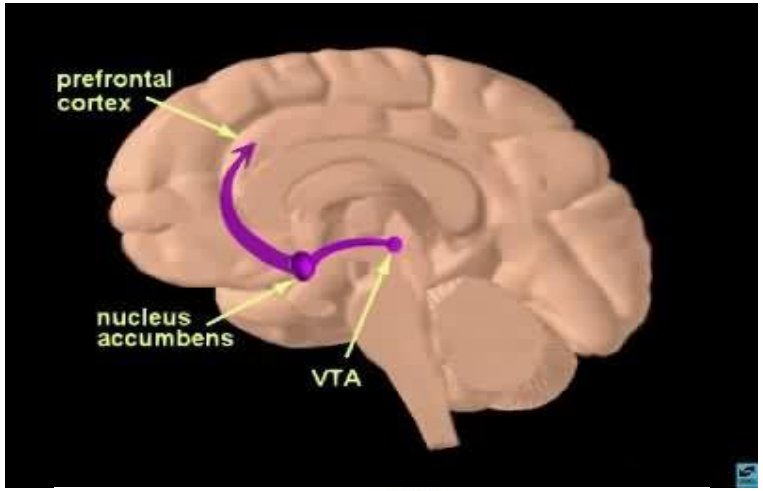
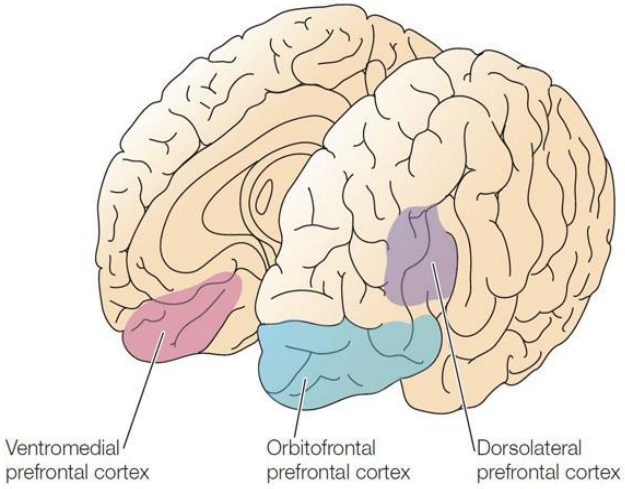
Loss of Control: Less Activity in dlPfD

(Carr ‘11; Volkow ’12; Weygandt ‘13)

- **dlPfC: Wise advocate; “Free Won’t” veto power** (Mirabella ’07)
  - **Impulsive individuals less grey matter** (Yokum ’12, ‘13; Batternick ‘10)
- **vmPfC/OfC: Salience** (Rolls ‘07)
- **dtMRI: Less interplay** (Weygandt ‘13)
  - **Result in impulsive & compulsive behaviors** (Le Doux ‘87; Goldstein ‘02)
  - **Contributes to overeating** (Dalley ’04; Le ’06, Tataranni ‘99, ‘03)





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Serotonin and Estrogen

- **Estrogen increases the effect of serotonin**
- **Low serotonin correlated with increased binge behavior** (van Strein ‘10)
- **Highest binge frequency coincides with low estrogen** (Klump ‘08; Hildebrandt ’15)
  - **Associated with depressed mood and increased appetite**
- **SSRIs decrease binge behavior** (Leombruni ’08; Steffano; Reas ’08; Arnold ‘02)

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Cues activate orexin in the absence of hunger

(Wu ‘13; Sakuri ’16; Marzullo ’04; Flores ‘13)

- **Avoiding danger & finding food** (Sakuri ’09)
- **Orexins regulate** (Tsujino ‘09; ‘13)
- **Wakefulness**
- **Motivational behavior**
  - **Feeding**
  - **Reward seeking**
- **Emotions**
- **Suvorexant: blocks OXR1 & OXR2**

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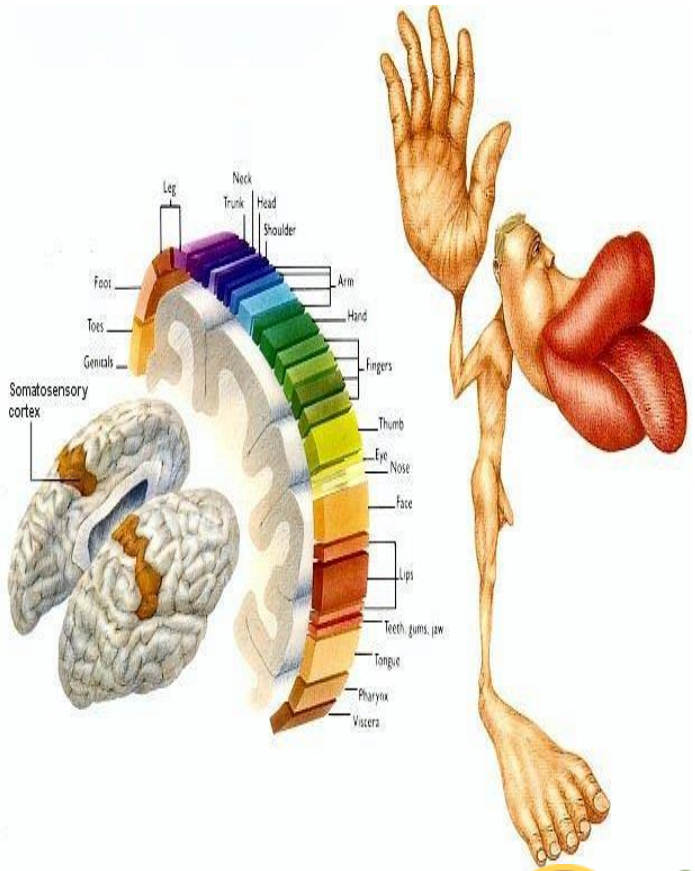
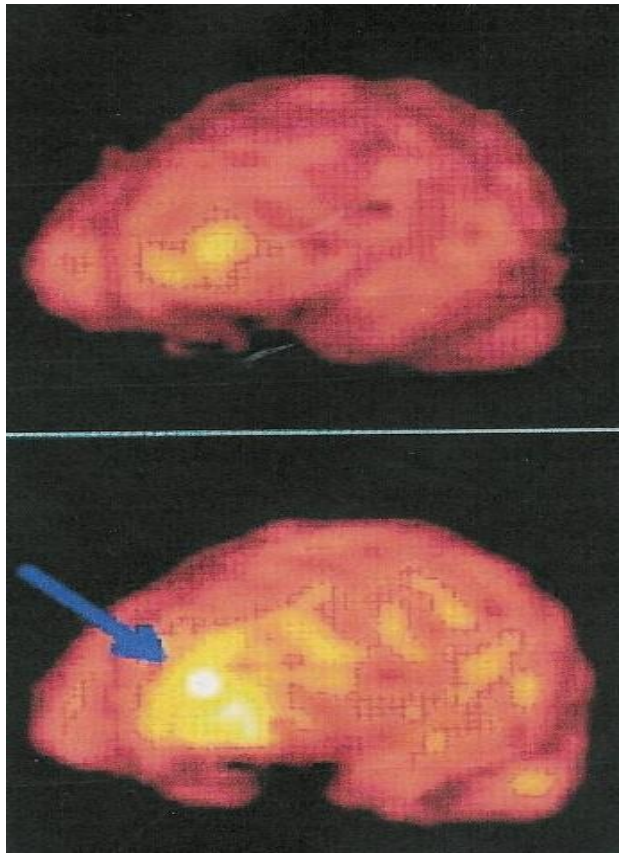
Homunculus

(Wang ‘01; ‘09)





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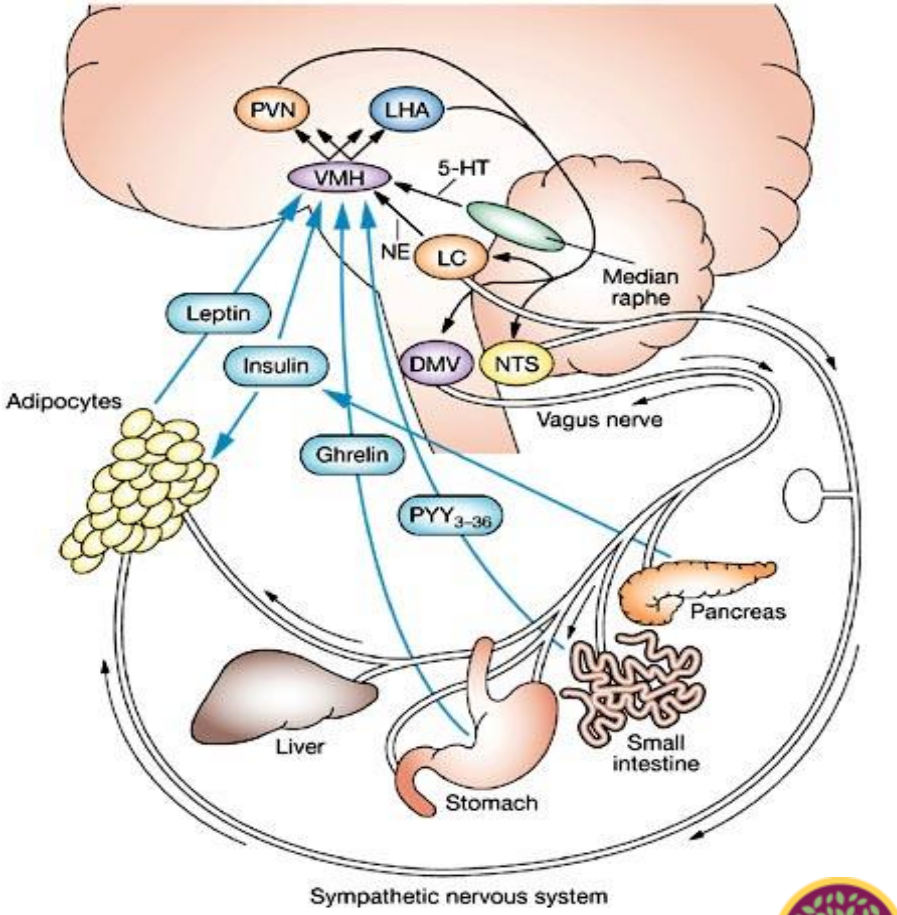
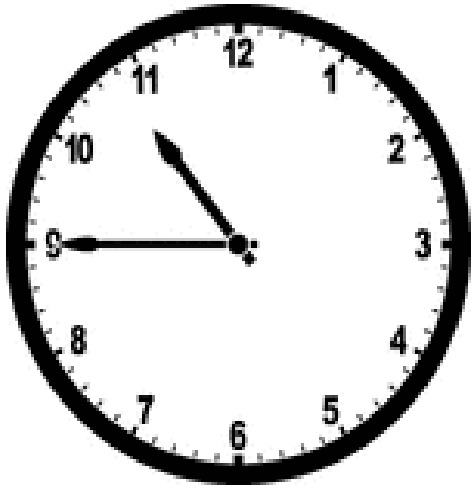
40 Minutes Before You "Feel" Full

(Liu '03; Wang '01; '09)





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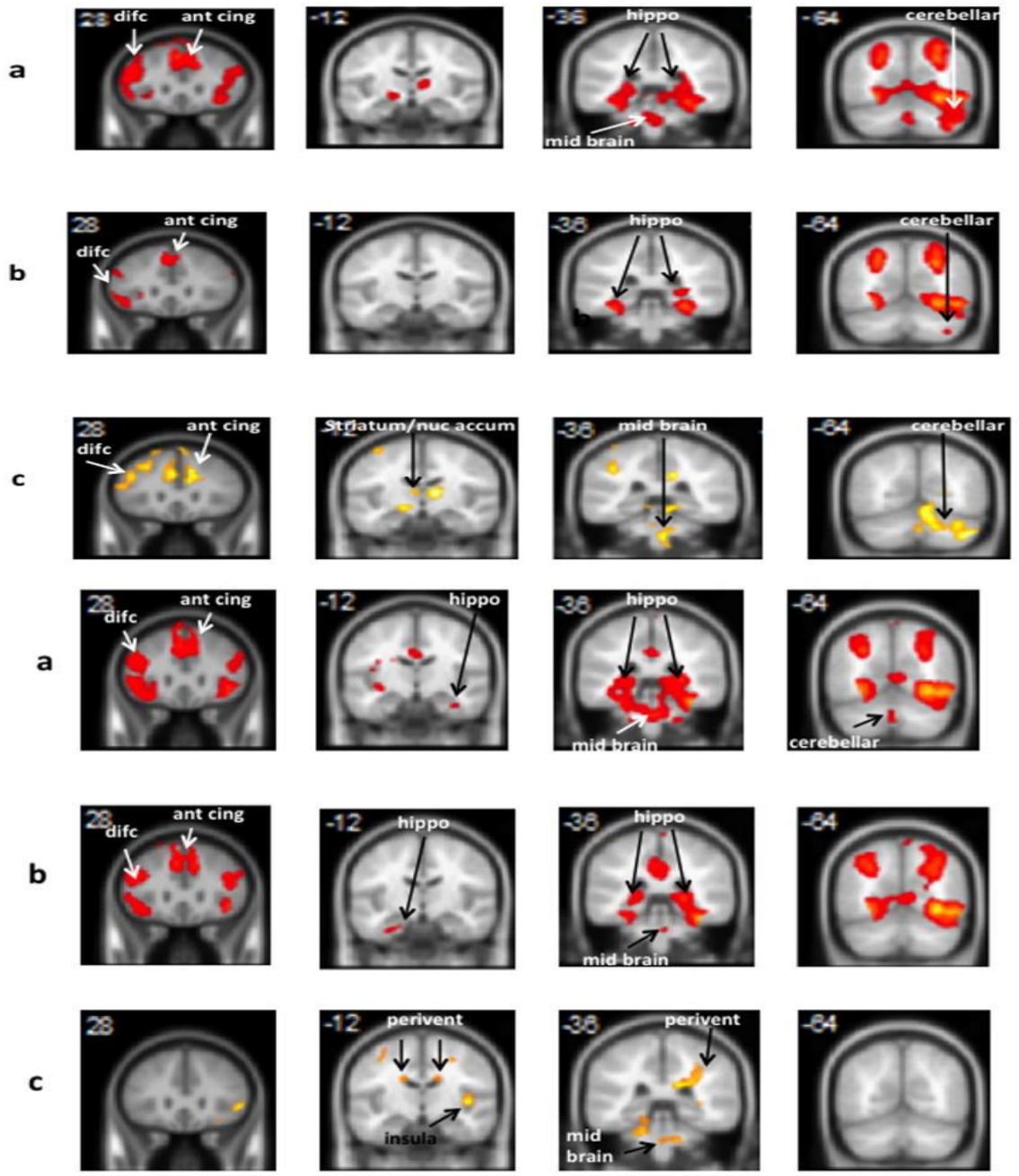
Brain Activity: Fullness and Satisfaction Imaging

(Puzziferi ‘16)

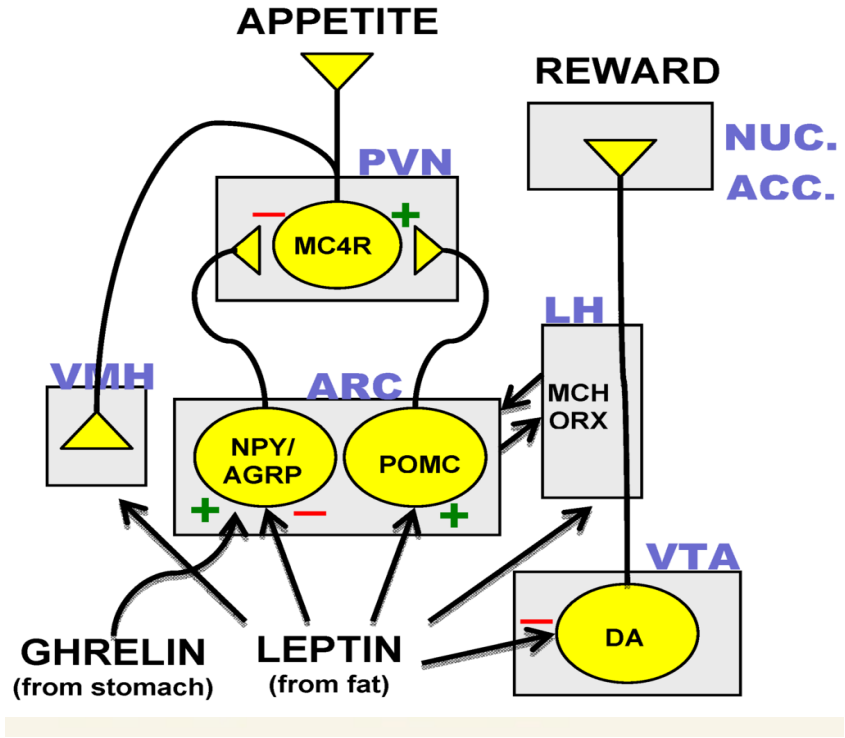
- **Fasting: Food cues did not differ perfusion in neo and limbic cortices regardless of BMI**
  - **Elevated in both**
- **After eating:**
  - **Lean: Brain activity & appeal ratings diminished**
  - **Obese: Activity and appeal ratings remained elevated**



Leptin

(Farooqi ’07; Hong ‘10; Zhang ‘10; Lin ’01; Miller ‘14)

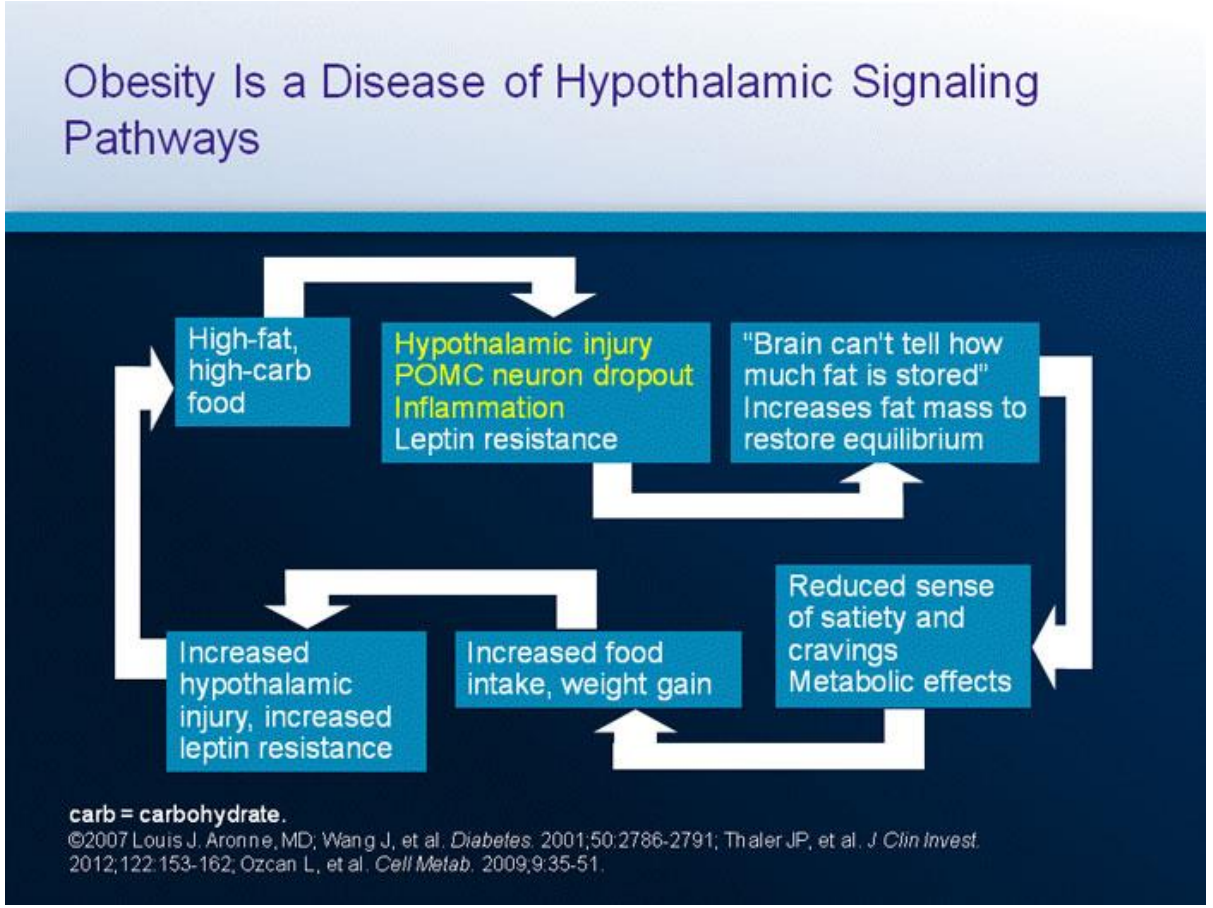
- **Leptin: Secreted by fat cells**
  - **Regulates fat mass**
  - **Fullness and caloric expenditure**
  - **Correlated with body weight**
- **Leptin resistance: Brain receptors can’t detect fullness** (Wilsey ’03)
  - **Obese: Chronically elevated leptin**
  - **Eat more and burn less**
- **Lack of response to leptin may not be weight dependent** (Geliebter ‘04)
  - **BED: Leptin rises with food intake** (Miller ‘14)



Highly Processed Foods Affect Appetite

(Thaler ‘12; Wang ‘01; Ozcan ’09, Coll ’07; Kumar ‘14)

- **Highly processed foods → hypothalamic injury** (Thaler ‘12; Coll ‘07)
  - **Gliosis; inflammation**
  - **POMC Neuron drop-out**
- **Leptin resistance: Brain cannot tell how much fat is stored** (Ozcan ‘09)
- **Increased food intake and weight gain** (Coll ’07; Wang ‘01)



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Ghrelin: Interface environmental nutritional cues and neuroendocrine circuits to control energy homeostasis

- **Food cues stimulate eating irrespective of fullness** (Petrovich ‘13)
  - **Inhibit eating in absence of hunger**
- **Initiates the exploration for food**
  - **Survival mechanisms encourage opportunistic eating**
- **Amplifies the sense of smell Increases the ability to identify and find food** (Tong ‘11)
- **Activates the hedonic and reinforcing aspects of food** (Skibicka ’11; Dickson ‘11)
  - **Incentive motivation: “Wanting”**

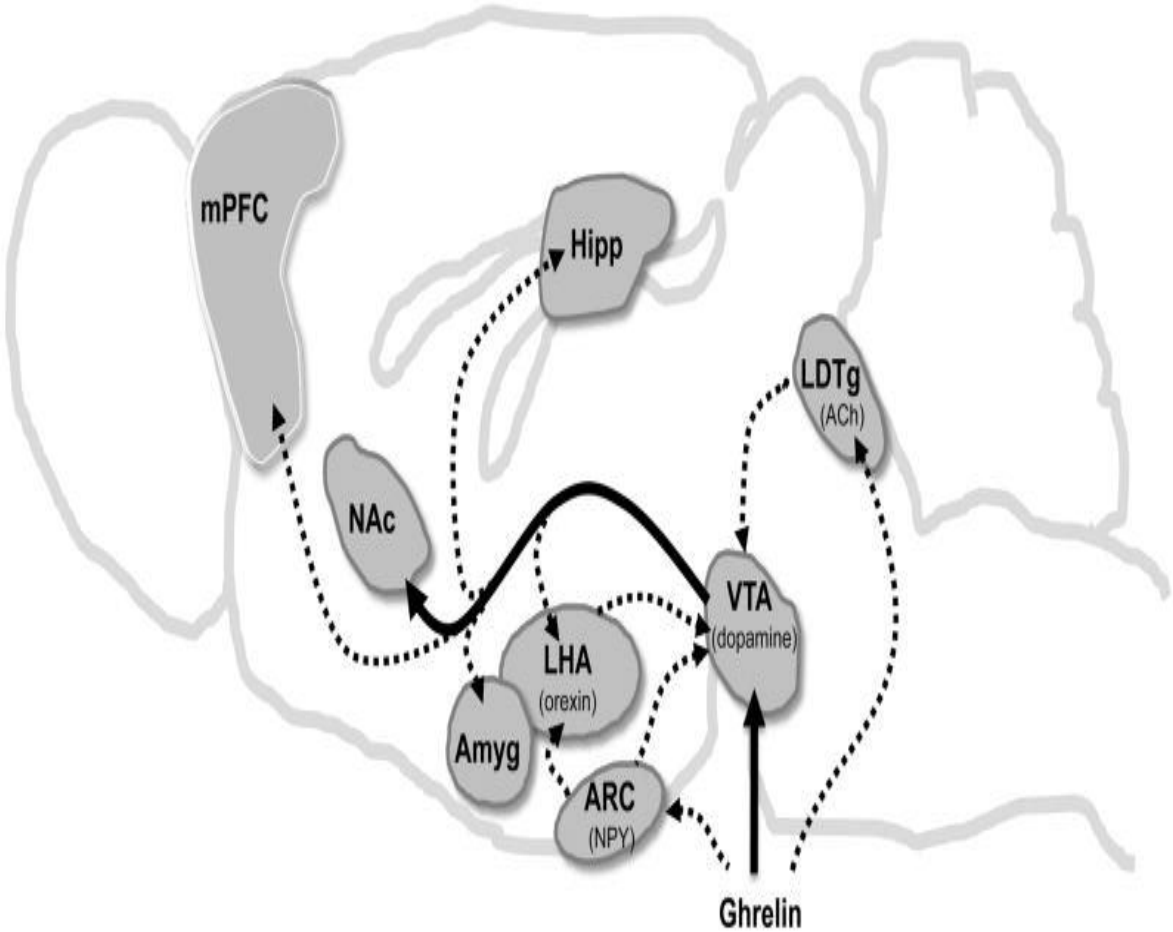
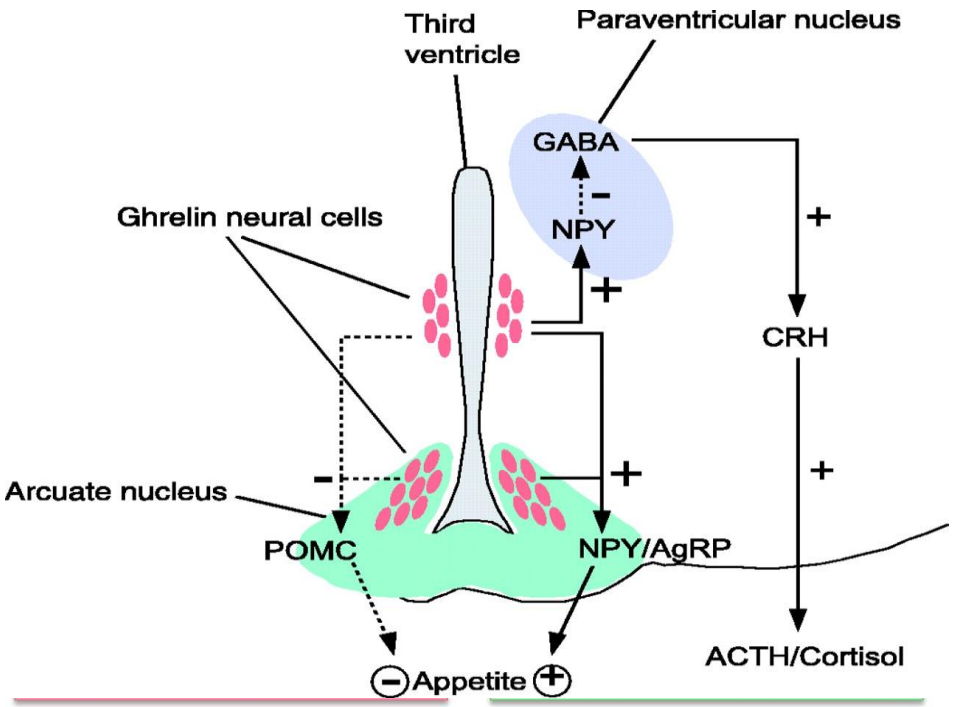


Figure 1: Cartoon of the most well described ghrelin mediated physiological functions

Ghrelin is lower in BED and Obese

(Geliebter ‘04; ‘05, ’08; Puzziferi ‘16)

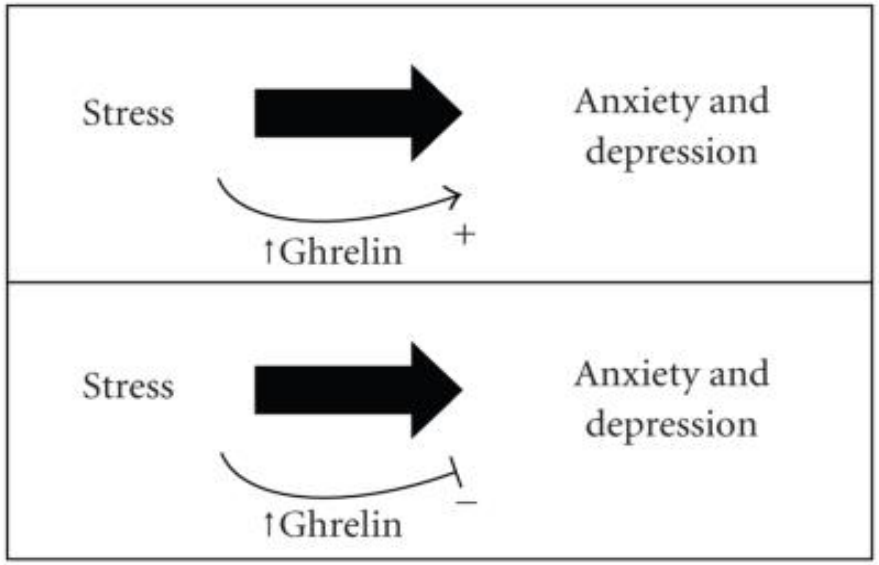
- **Suggest down regulation by overeating**
- **State vs. Trait** (Atalayer ‘13)
  - **Ghrelin dysregulation is involved in maintenance, but not the cause**
- **Ghrelin ↑ with weight loss causing ↑ cravings & ↑ food cue responsiveness**
- **Difficult to change eating behaviors with weight loss** (Atalyer ‘13)
  - **Drive is higher for food**
- **Ghrelin varies with duration of eating disorder**



Ghrelin: Stress

(Lutter ‘08; Asakowa ‘01; Kristensson ‘06; Chuang ‘10)

- **Some eat more and others eat less when under stress** (Gibson ’06; Dallman ‘10)
  - **Stress → ↑ Cortisol and insulin**
  - **HPF → ↓ stress → reinforce eating habits**
  - **Habits are used instead of rational thoughts (mental reappraisal)**
- **Stress (e.g. caloric restriction) ↑ ghrelin** (Valdivia ’15; Perello ’12; Gluck ‘14)
- **Psychological stressful urges to eat uncontrollably are not always modulated by ↑ ghrelin** (Rouach ‘07)
- **Ghrelin response is conflicting**: (Dallman ‘10)
  - **Coping with or raising stress level**s



Insulin Resistance
(Hardy ‘12)

- **Prevalence: 26%-32%** (Bermudez ’16; Ioannou ‘07)
  - **70% obese** (Koselak ’12)
- **Excess insulin:**
  - **Fat storage**
  - **Prevents fat breakdown**
  - **Increases appetite**
- **Symptoms:**
  - **Excess hunger after meal**
  - **Creeping & sudden weight gain**
    - **Associated with stress**
  - **Difficulty losing weight**

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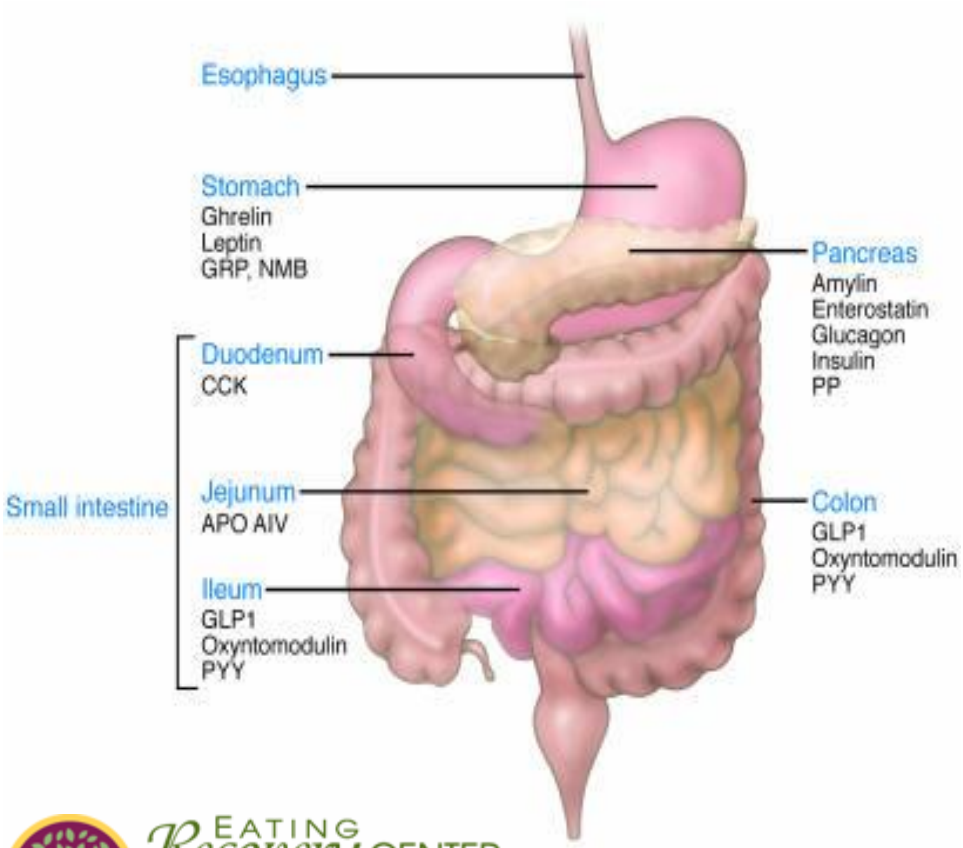
Dieting disrupts gut peptide mediation of hunger

(Marx '03; Suzuki '10', '11, '12; Ludwig '14)

- **Stomach: Ghrelin**
- **Pancreas: Insulin**
- **Duodenum: CCK**
- **Ilium: PYY; GLP-1**
- **Colon: GLP-1**
- **Microbiota** (Parekh '14; Ridaura '13; Da Silva '13)
- **CCK, PPY, and CCK no different in BED and non-BED**
  - **Irreversible following dieting** (Sumithoran '14)



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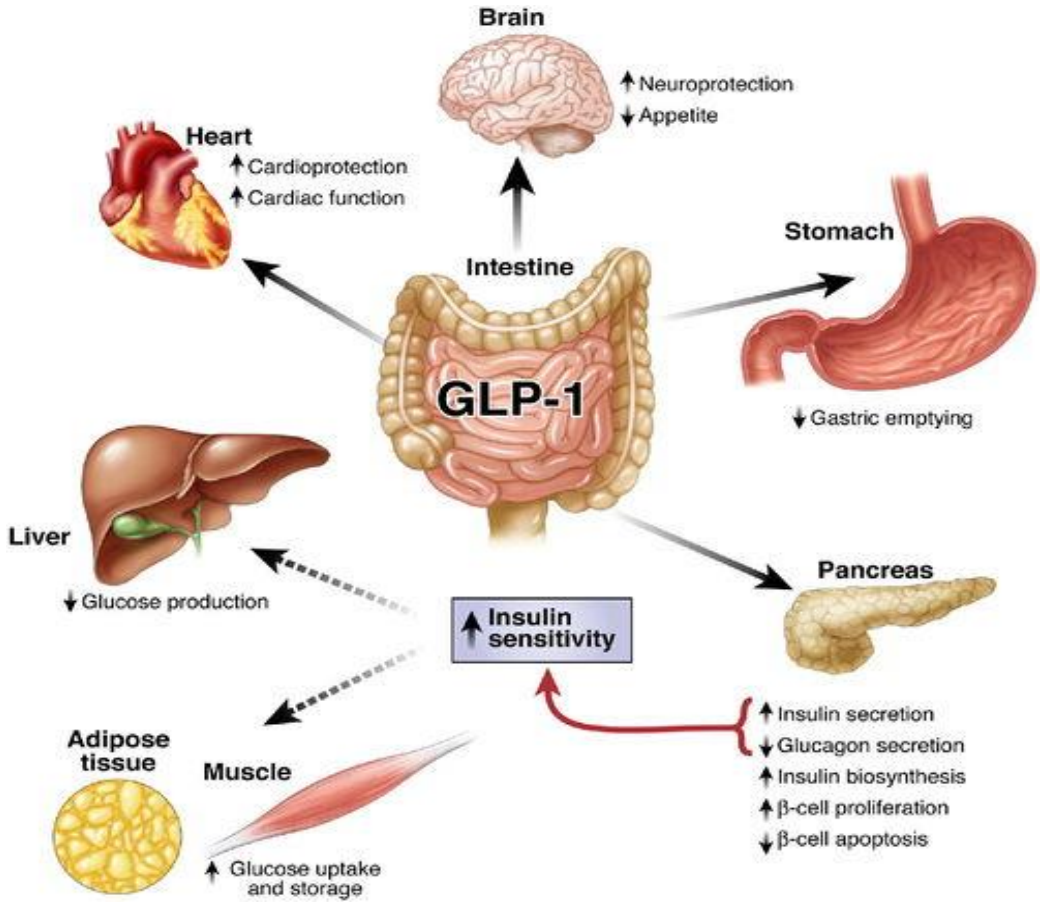
Glucagon like peptide-1 (GLP-1)

- **Slows gastric emptying**
- **Decreased appetite** (Cao ‘14)
- **Exenatide and liraglutide GLP-1 antagonist; antidiabetic agents**
  - **Beneficial effect on insulin sensitivity** (Cao ‘14)
- **Bariatric surgery: Cures Diabetes** (Mason 08, ‘13, ’15; Dixon ‘08)
- **Same levels in BED and non-BED** (Geliebter ‘08)



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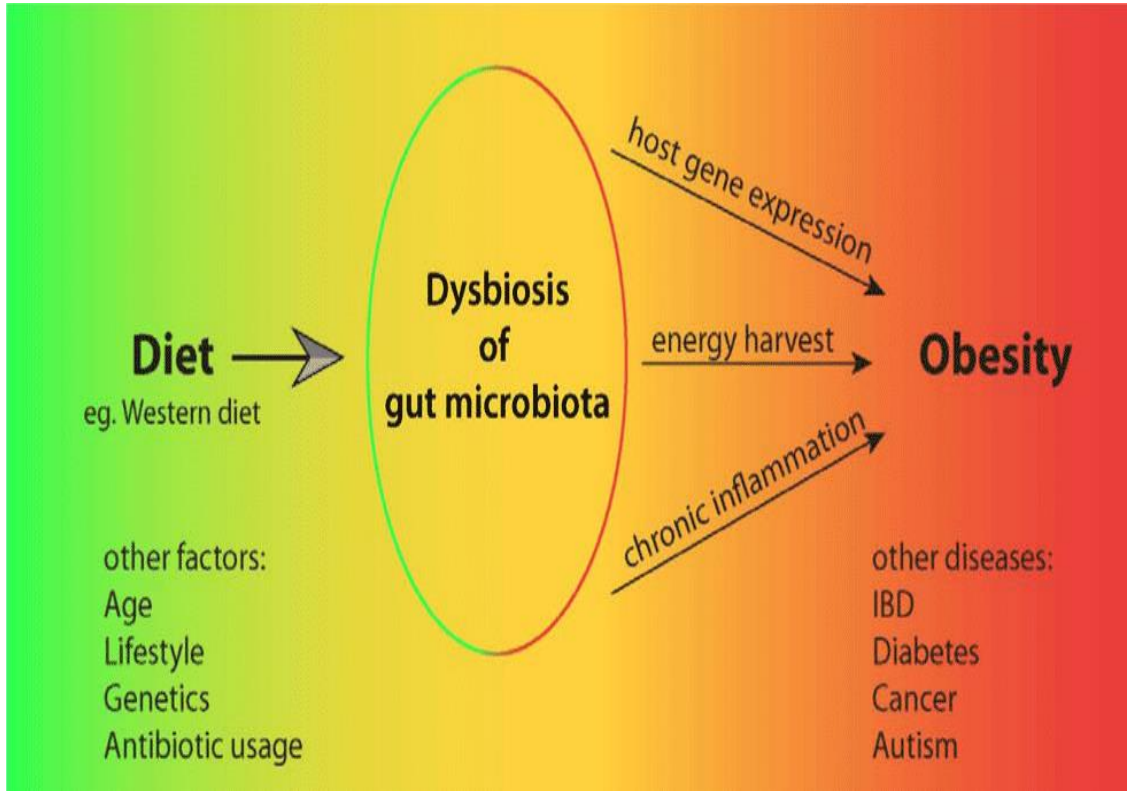
Influence of gut microbiota

(Parekh ‘14; Ridaura ‘13; Da Silva ‘13)

- **Ob gut microbiota**
  - **More proficient at extracting calories from food**
  - **Increases fat storage and obesity**
  - **Decreased fullness**
    - **PYY, GLP-1**
  - **Increased inflammation**
  - **Insulin resistance**
- **Fecal Transplants** (Kleiman ‘15)



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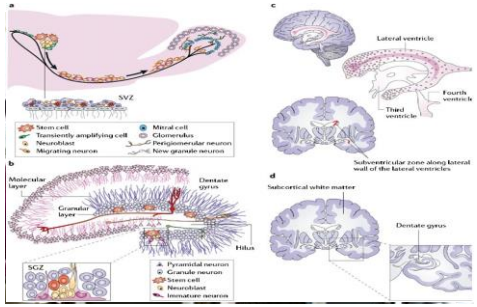
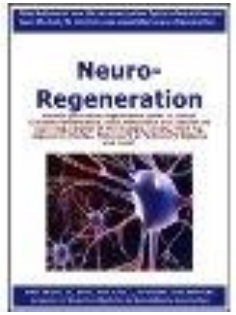
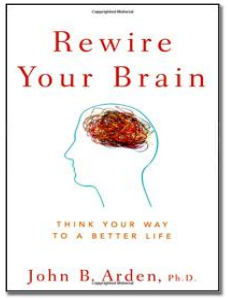
Lisdexamfetamine	Vyvance ®	DRI; vmPfC-dlPfC; PEA	BED; Control; Reduces obsession/compulsion
Fluoxetin	Prozac®	SSRI	Emotional eating
Naltrexone & Bupropion	Contrave ®	VTA; mu-opioid antagonist	LOC; Cravings
Topiramate & Phentermine	Qsymia®	GABA; cortisol	Addiction; Emotional Eating; Fullness
Fenfluramine	Belviq®	SSRI; MC4R	Emotional Eating; Fullness
Exenatide & Liraglutide	Byetta® & Saxsenda®	GLP-1	Fullness ; Insulin Resistance
Suvorexant	Belsomra®	Orexin-1R/2R antagonist	NES; Addiction; Emotional eating

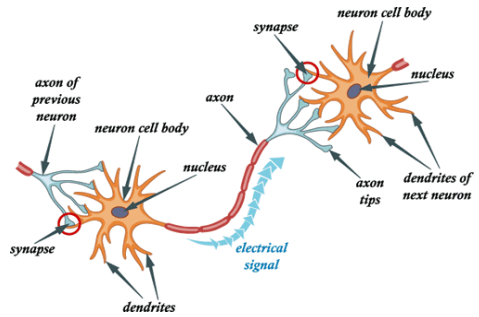
Psychotherapies

[CBT] Cognitive Based Therapy	[CRT] Cognitive Remediation Therapy	Achievement Motivation
[ERP] Exposure with Response Prevention	[MBT] Mentalization based therapy	12-Step
[IPT]Interpersonal therapy	[PPT] Psychodynamic Psychotherapy	[RET] Rational Emotive Therapy
[DBT] Dialectical Therapy Radically Open DBT	[MCT] Mindfulness Compassion Based Therapy	Positive Psychology
[ACT]Acceptance Commitment Therapy	Motivational Interviewing	Hypnosis
[FBT]Family based therapy	Psychoanalysis	Expressive Therapy (Art, Movement, Dance, Psychodrama)
[MBT] Mindfulness Based therapy	EMDR (trauma)	Pet Therapy (Equine Therapy)



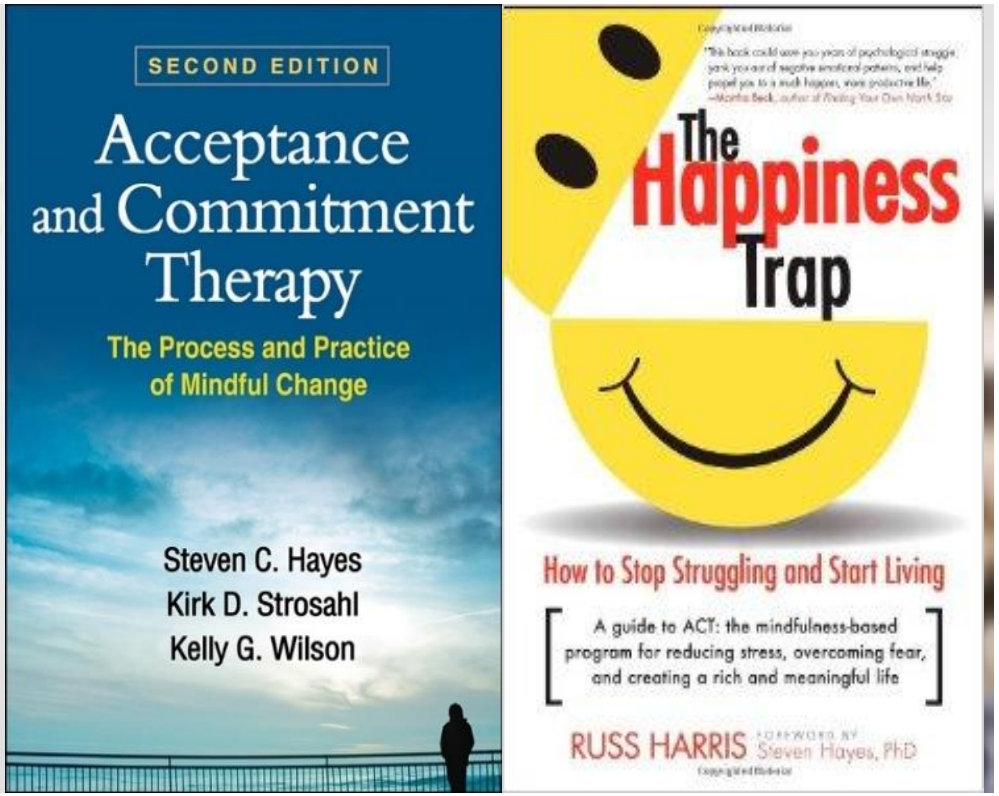






Evidence Based: Long Term Efficacy

- **CBT: 1st option** (Wilson ’05; ’10; Vocks ‘10)
  - **60% > abstinence** (Hilbert ’12)
- **DBT: Preliminary support** (Telch ‘01; Safer ‘10)
  - **89% stopped BE by the end of treatment**
  - **Abstinent @ 6 mos. follow-up**
- **ERP: “Sit with fears long enough and they dissipate”** (Steinglass ‘12; Leitenberg ‘88)
  - **54% 5 year abstinence** (McIntosh ‘11)
  - **80% success @ decreasing binging** (Foa ‘10; Frances ‘97)
- **ACT: Create a full and meaningful life consistent with values** (Hayes ‘82; ‘05; ‘16; Harris ’08; Codd ‘10)



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Address eating behavior first…mood and anxiety improvement follows

(Vocks '10)

- Prescribed Pattern of Regulated Eating (PPRE)
- Eliminating dietary "rules"
  - Calories & measuring
- Regulating responses to "trigger" foods
  - Avoiding abstinence or bingeing
- Modifying emotional & impulsive decision making
  - Structure & pre-commitment

TECHNIQUE	HUNGER
GENTLE EATING	SATIATION
MINDFUL EATING	SATIETY
PACING	APPETITIVE
HEALTHY CHOICES	SATISFACTION
INTUITIVE EATING	EMOTIONAL

Physical Wellness, Joyful movement & Lifestyle Activity

- **Physical Wellness**

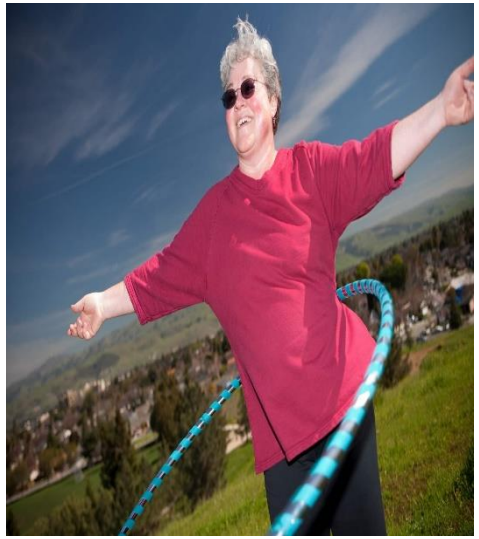
- **Assessment**
- **Corrective exercises**
- **Remove limitations and fears**
- **Higher tolerance level**

- **Joyful Movement**

- **Fun**
- **Variety**
- **Reduces Cortisol** (Creswell ‘13; Oswald ‘05; Ahmadzadeh ’06; Mastorakos ’05a,b; Louvallo ‘08)

- **Lifestyle Activity**

- **Motion monitor**
- **Baseline**
- **Customized**
- **Inefficient**



Sleep Deprivation: Improving Sleep Quality and Quantity

- ↓ Leptin
- ↑ Ghrelin
- ↑ Cortisol: Hunger
- ↑ Cravings
- Sleep hygiene
- Circadian Rhythm Shift
  - Melatonin
  - Light Therapy
  - Sleep Restriction
- CPAP

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Referring to a Higher Level of Care

- **Limited progression**
  - **Cannot break cycle**
  - **Chronic relapse**
- **Medically or nutritionally unstable**
- **Psychiatric co-morbidities**
- **Suicidal**
- **Independently perform activities of daily living**

Levels of care for eating disorders

- Outpatient
- Intensive outpatient (IOP) or partial hospital (PHP)
- Residential treatment
- Inpatient hospitalization
- Community resources

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Modifying Treatment for Loss of Control Eating with Traditional Eating Disorders

Temperament	Anorexia	BED
Novelty Seeking	Low	High
Harm Avoidance	High	High
Reward Dependence	Low	High
Persistence	High	Low
Self-Directedness	Low	Low
Cooperativeness	Low	Low
Self-transcendence	High	High

- **Neurobiological opposites**
- **Older population** (Goldschmidt ’11; Reas ’07)
- **Different medical co-morbidities**
- **Different medications**
- **High drop out rates** (Aguerra ’13; Wilson ‘11; Bulik ‘12)
- **Differences in personality** (Cloninger ‘94)

Customized designs offering specialized treatment for Higher Weight Individuals

- Appropriate furnishings, medical devices, & exercise equipment
- Movement restrictions
- Unique dietary needs
- Activity consideration
- Separate programming

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What does complete recovery look like

- Not engaging in pathological eating behavior
  - Free from binge eating episodes
  - Healthy relationship with food
  - Not malnourished or restricting
- Reduce health risks
- Stable body weight for months
- Maximize physical capacity
  - Mobility
- Improve sleep quality & quantity
- Accept your natural body size

Confidence
Identify Personal Strengths & Values
Purpose & Fulfillment
Resilience
Enduring Life-skills
Healthy Relationships & Peer Support
Believable Hope

Thank You


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